

WHAT IS CLAIMED IS:

1. A method of detecting collisions in a shared communications medium, comprising:

- (a) receiving a signal;
- (b) calculating a correlation metric from the signal;
- (c) measuring a signal to noise ratio (SNR) of the received signal when the correlation metric is greater than a first threshold; and
- (d) classifying the received signal as a collision when the SNR is less than a second threshold.

2. The method of claim 1, wherein step (b) comprises correlating the received signal with a second signal that corresponds to a preamble sequence.

3. The method of claim 1, wherein step (c) comprises measuring an SNR of a data portion of the received signal.

4. The method of claim 1, wherein step (a) comprises receiving one or more transmissions from a time division multiple access (TDMA) medium.

5. A method of detecting collisions in a shared communications medium, comprising:

- (a) receiving a signal from the shared communications medium;
- (b) generating a correlation metric from the signal;
- (c) measuring a signal to noise ratio (SNR) of the received signal when the correlation metric is greater than a first threshold;
- (d) measuring a signal power when the correlation metric is less than or equal to the first threshold;
- (e) classifying the signal as a collision when the measured signal power is greater than a second threshold; and

(f) classifying the signal as a collision when the measured SNR is less than a third threshold.

6. The method of claim 5, further comprising classifying the transmission as an empty slot when the measured transmission power is less than or equal to the second threshold.

7. The method of claim 5, further comprising classifying the transmission as a bad packet when the measured transmission power is greater than the second threshold and less than or equal to the third threshold.

8. The method of claim 5, wherein step (b) comprises correlating the signal with a second signal that corresponds to a preamble sequence.

9. The method of claim 5, wherein step (c) comprises measuring an SNR of a data portion of the signal.

10. The method of claim 5, wherein step (d) comprises measuring a power of a data portion of the signal.

11. The method of claim 5, wherein step (a) comprises receiving one or more transmissions from a time division multiple access (TDMA) medium.

12. A system for detecting collisions in a shared communications medium, comprising:

a receive path adapted to generate a first intermediate signal, a second intermediate signal, and a data symbol sequence from an input signal;

a preamble detection module adapted to generate a correlation metric from the first intermediate signal;

a power measurement module adapted to generate a power indication signal from the second intermediate signal;

a signal to noise ratio (SNR) measurement module adapted to generate a SNR indication signal from the second intermediate signal and the data symbol sequence; and

a processing module adapted to characterize the input signal.

13. The system of claim 12, wherein the processing module is adapted to characterize the input signal as a collision when the correlation metric is greater than a first threshold and the SNR indication signal is less than a second threshold.

14. The system of claim 12, wherein the processing module is adapted to characterize the input signal as a collision when the correlation metric is less than or equal to a first threshold and the power indication signal is greater than a second threshold.

15. The system of claim 12, wherein the first intermediate signal is a baseband signal.

16. The system of claim 12, wherein the second intermediate signal is a soft decision signal.

17. The system of claim 12, wherein the input signal comprises one or more transmissions received from a time division multiple access (TDMA) medium.

18. A method of detecting collisions in a shared communications medium, comprising:

- (a) receiving a signal;
- (b) calculating a correlation metric from the signal;

- (c) measuring a signal power during a portion of the received signal;
- (d) measuring a signal to noise ratio (SNR) during a portion of the signal; and
- (e) classifying the received signal as a collision or a non-collision based on the logical combination of the correlation metric, the measured signal power, and the SNR.

19. The method of claim 18, wherein step (e) comprises classifying the received signal as a collision when the correlation metric is greater than a first threshold, the SNR is less than or equal to a second threshold, and the measured signal power is greater than a third threshold.

20. The method of claim 18, wherein step (e) comprises classifying the received signal as a collision when the correlation metric is greater than a first threshold, the SNR is less than or equal to a second threshold, and the measured signal power is greater than a third threshold and less than or equal to a fourth threshold.

21. The method of claim 18, wherein step (e) comprises classifying the received signal as a collision when the correlation metric is greater than a first threshold, the SNR is less than or equal to a second threshold, and the measured signal power is less than or equal to a third threshold.

22. The method of claim 18, wherein step (e) comprises classifying the received signal as a collision when the correlation metric is less than or equal to a first threshold, and the measured signal power is greater than a second threshold.